

16869P-105400US

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

IKUYA YAGISAWA *et al.*

Application No.: 10/777,832

Filed: February 11, 2004

For: DISK ARRAY OPTIMIZING  
THE DRIVE OPERATION TIME

Customer No.: 20350

Examiner: Unassigned

Technology Center/Art Unit: 2818

Confirmation No.: 5908

**RESUBMISSION OF PETITION TO  
MAKE SPECIAL FOR NEW  
APPLICATION UNDER M.P.E.P.  
§ 708.02, VIII & 37 C.F.R. § 1.102(d)****MAIL STOP PETITION**Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The enclosed Petition to Make Special was filed on October 26, 2004. Also enclosed is a copy of the Express Mail label stamped October 26, 2004, the return postcard stamped October 26, 2004, the Transmittal Form, and the Fee Transmittal.

No decision on the Petition has not been entered according to Patent Application Information Retrieval (PAIR).

In view of the foregoing, Applicants respectfully request entry of the Petition and issuance of a first Office Action at an early date.

Respectfully submitted,

Chun-Pok Leung  
Reg. No. 41,405

TOWNSEND and TOWNSEND and CREW LLP  
Two Embarcadero Center, 8<sup>th</sup> Floor  
San Francisco, California 94111-3834  
Tel: 650-326-2400; Fax: 415-576-0300  
Attachments  
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60600486 v1



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EV 530886980 US

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## TO THE U.S. PATENT AND TRADEMARK OFFICE:

60340806v1

Application No.:	10/777,832	Docket No.:	16869P-105400US
Confirmation No.:	5908	Attorney:	RL:jbs
Due Date:	N/A		
Date Mailed:	October 26, 2004		

Please stamp the date of receipt of the following documents and return this card to addressee.

- Transmittal Form
- Fee Transmittal (in duplicate)
- Petition to Make Special
- Five (5) cited references: (U.S. Patent Nos. 5,900,007; 5,461,266; 5,734,912; D.A. Patterson et al., "A Case for Redundant Arrays....." and Japanese Patent Publication No. 2000-293314)
- Return Receipt Postcard



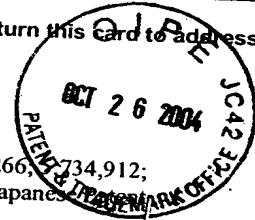
## TO THE U.S. PATENT AND TRADEMARK OFFICE:

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- Return Receipt Postcard



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PTO/SB/21 (04-04)

<b>TRANSMITTAL FORM</b> (to be used for all correspondence after initial filing)	Application Number	10/777,832	
	Filing Date	February 11, 2004	
	First Named Inventor	YAGISAWA, Ikuya	
	Art Unit	2818	
	Examiner Name	Unassigned	
Total Number of Pages in This Submission	9	Attorney Docket Number	16869P-105400US

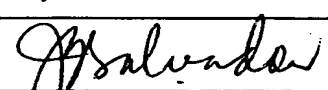
**ENCLOSURES (Check all that apply)**

<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input checked="" type="checkbox"/> Petition to Make Special <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance Communication to Technology Center (TC) <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): Return Postcard Five (5) cited references
<b>Remarks</b> The Commissioner is authorized to charge any additional fees to Deposit Account 20-1430.		

**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT**

Firm or Individual name	Townsend and Townsend and Crew LLP Chun-Pok Leung	Reg. No. 41,405
Signature		
Date	October 26, 2004	

**CERTIFICATE OF TRANSMISSION/MAILING**

Express Mail Label: EV 530886980 US			
I hereby certify that this correspondence is being deposited with the United States Postal Service with "Express Mail Post Office to Address" service under 37 CFR 1.10 on this date <b>October 26, 2004</b> and is addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.			
Typed or printed name	Joy Salvador		
Signature		Date	October 26, 2004

**EV530886980US**

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PTO/SB/17 (10-04)

# FEE TRANSMITTAL

## for FY 2005

Effective 10/01/2004. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.171.

TOTAL AMOUNT OF PAYMENT (\$) 130.00

Complete if Known

Application Number 10/777,832

Filing Date February 11, 2004

First Named Inventor YAGISAWA, Ikuya

Examiner Name Unassigned

Art Unit 2818

Attorney Docket No. 16869P-105400US

## METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

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20-1430

Deposit Account Name

Townsend and Townsend and Crew LLP

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☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

## FEE CALCULATION

## 1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	790	2001	395	Utility filing fee	
1002	350	2002	175	Design filing fee	
1003	550	2003	275	Plant filing fee	
1004	790	2004	395	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1)

(\$0.00)

## 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims		Extra Claims		Fee from below		Fee Paid
Independent Claims						
Multiple Dependent						

Large Entity		Small Entity		Fee Description
Fee Code	Fee (\$)	Fee Code	Fee (\$)	
1202	18	2202	9	Claims in excess of 20
1201	88	2201	44	Independent claims in excess of 3
1203	300	2203	150	Multiple dependent claim, if not paid
1204	88	2204	44	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2)

(\$0.00)

\*\*or number previously paid, if greater; For Reissues, see above

## FEE CALCULATION (continued)

## 3. ADDITIONAL FEES

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for ex parte reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	430	2252	215	Extension for reply within second month	
1253	980	2253	490	Extension for reply within third month	
1254	1,530	2254	765	Extension for reply within fourth month	
1255	2,080	2255	1,040	Extension for reply within fifth month	
1401	340	2401	170	Notice of Appeal	
1402	340	2402	170	Filing a brief in support of an appeal	
1403	300	2403	150	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,370	2501	685	Utility issue fee (or reissue)	
1502	490	2502	245	Design issue fee	
1503	660	2503	330	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	130
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	790	2809	395	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	790	2810	395	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	790	2801	395	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify)

\*Reduced by Basic Filing Fee Paid

SUBTOTAL (3)

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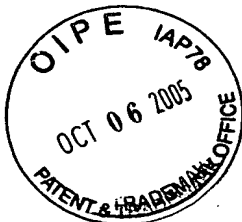
## SUBMITTED BY

Complete (if applicable)

Name (Print/Type) Chun-Pok Leung Registration No. (Attorney/Agent) 41,405 Telephone 650-326-2400

Signature *Chun-Pok Leung* Date October 26, 2004

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**PATENT**  
Attorney Docket No.: 16869P-105400US  
Client Ref. No.: 340301085US011

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

IKUYA YAGISAWA *et al.*

Application No.: 10/777,832

Filed: February 11, 2004

For: DISK ARRAY OPTIMIZING  
THE DRIVE OPERATION TIME

Customer No.: 20350

Examiner: Unassigned

Technology Center/Art Unit: 2818

Confirmation No.: 5908

**PETITION TO MAKE SPECIAL FOR  
NEW APPLICATION UNDER M.P.E.P.  
§ 708.02, VIII & 37 C.F.R. § 1.102(d)**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This is a petition to make special the above-identified application under MPEP § 708.02, VIII & 37 C.F.R. § 1.102(d). The application has not received any examination by an Examiner.

(a) The Commissioner is authorized to charge the petition fee of \$130 under 37 C.F.R. § 1.17(i) and any other fees associated with this paper to Deposit Account 20-1430.

(b) All the claims are believed to be directed to a single invention. If the Office determines that all the claims presented are not obviously directed to a single invention, then Applicants will make an election without traverse as a prerequisite to the grant of special status.

(c) Pre-examination searches were made of U.S. issued patents, including a classification search, a computer database search, a keyword search, a literature search, and a foreign patent document search. The searches were performed on or around August 19, 2004, and were conducted by a professional search firm, Kramer & Amado, P.C. The classification search covered Classes 711 (subclass 113), 713 (subclasses 310 and 321), and 714 (subclass 6). The computer database search was conducted on the USPTO systems EAST and WEST. The keyword search was conducted in Classes 710 (subclass 5); 711 (subclasses 112, 114, 154, and 162); 713 (subclasses 300, 320, 322, and 323), and 714 (subclasses 5 and 7). The literature search was conducted on the Internet. The search for foreign patent documents was conducted on the Espacenet and Delphion databases. The inventors further provided two references considered most closely related to the subject matter of the present application (see references #4 and #5 below), which were cited in the Information Disclosure Statement filed with the application on February 11, 2004.

(d) The following references, copies of which are attached herewith, are deemed most closely related to the subject matter encompassed by the claims:

- (1) U.S. Patent No. 5,900,007;
- (2) U.S. Patent No. 5,461,266;
- (3) U.S. Patent No. 5,734,912;
- (4) David A. Patterson et al., "A Case for Redundant Arrays of Inexpensive Disks (RAID); and
- (5) Japanese Patent Publication No. 2000-293314.

(e) Set forth below is a detailed discussion of references which points out with particularity how the claimed subject matter is distinguishable over the references.

A. Claimed Embodiments of the Present Invention

The claimed embodiments relate to an external storage device system and, more particularly, to a technology for prolonging an operation period of a disk device (hereafter also referred to simply as a disk) and decreasing power consumption of a storage device system (hereafter referred to as a disk array). The disk device's operation period signifies a period from the time to start using the disk device to the time when the disk device becomes unusable.

Independent claim 1 recites a storage system connected to a computer. The storage system comprises a plurality of logical units comprising disk devices. The storage system receives an instruction from the computer to turn on or off a disk device corresponding to the logical unit. Based on the instruction, the storage system turns on or off the disk device corresponding to the logical unit independently of disk devices corresponding to the other logical units.

Independent claim 7 recites a computer system comprising a computer; and a storage system. The storage system has a plurality of logical units comprising disk devices. The computer provides the storage system with an instruction to turn on or off a disk device corresponding to the logical unit. The storage system receives the instruction; and turns on or off the disk device corresponding to the logical unit based on the instruction independently of disk devices corresponding to the other logical units.

Independent claim 14 recites a computer program product for a computer system comprising a computer and a storage system having a plurality of logical units comprising disk devices. The computer program product comprises code for the computer to provide the storage system with an instruction to turn on or off a disk device corresponding to the logical unit; code for the storage system to receive the instruction; code for the storage system to turn on or off a disk device corresponding to the logical unit based on the instruction independently of disk devices corresponding to the other logical units; and a computer readable storage medium for storing the codes.

One benefit that may be derived is prolonging operation times of disk devices constituting a disk array and decreasing the disk array's power consumption.



B. Discussion of the References

None of the following references disclose or suggest a storage system that receives an instruction from the computer to turn on or off a disk device corresponding to the logical unit and, based on the instruction, turns on or off the disk device corresponding to the logical unit independently of disk devices corresponding to the other logical units.

1. U.S. Patent No. 5,900,007

This reference discloses a data storage and retrieval system that includes a large array of small disk files, and three storage managers for controlling the allocation of data to the array, access to data, and the power status of disk files within the array. The operation of the data storage system centers around power management subsystem 106, which manages disk array 110 such that at any point in time some disk files are active (power-on) and others are inactive (power-off), and further such that the disk files which are active are those determined to be the best suited to serving the read and write storage requests pending in the system at that time. See column 3, line 46 to column 4, line 51.

2. U.S. Patent No. 5,461,266

This reference discloses a system for controlling power consumption for an information processing apparatus. Reducing the power consumed by the floppy disk drive or the hard disk drive is achieved by monitoring the use of the disk drive by means of an exclusive CPU and automatically stopping a motor for the drive if there has been no access thereto for a given period of time.

3. U.S. Patent No. 5,734,912

This reference relates to a power control apparatus for an input/output subsystem comprising an input/output control section, which is provided in a disk unit, and performs control of data input/output to and from the plurality of disk modules in the same unit and issuance, upon power-on, of a power-on instruction in compliance with a predetermined procedure.

4. David A. Patterson et al., "A Case for Redundant Arrays of Inexpensive Disks (RAID)"

This reference discloses a disk array as a type of storage device systems connected to a computer. The disk array is also referred to as a RAID (Redundant Arrays of Inexpensive Disks) and constitutes a storage device system comprising a plurality of disk devices arranged in an array and a control section to control them. The disk array concurrently operates disk devices to accelerate read requests (requests to read data) and write requests (requests to write data) and to provide data with redundancy. Disk arrays are categorized into five levels depending on types of redundant data to be added and disk array configurations.

5. Japanese Patent Publication No. 2000-293314

This reference discloses a technique to suppress the power consumption of a magnetic disk drive mounted on a disk array device. The device is provided with a means which controls the relation between the configuration of plural magnetic disk drives and access from a host device 101, a power-saving controlling means which controls the power-saving (selection of power on/off and power-saving mode) of magnetic disk drives in a set logical drive, and a controlling means which controls the diagnoses of the magnetic disk drives. This disk array device 110 shifts a prescribed magnetic disk drive to a power-saving mode or turns off the power (power-saving processing) after access from the device 101 does not exist any more and a predetermined time elapses. The magnetic disk drive undergoing power-save processing is subjected to diagnosis execution after a prescribed time passes at the start of the power-saving processing or when a designated time comes in order to maintain its reliability.

(f) In view of this petition, the Examiner is respectfully requested to issue a first Office Action at an early date.

Respectfully submitted,



Chun-Pok Leung  
Reg. No. 41,405

TOWNSEND and TOWNSEND and CREW LLP  
Two Embarcadero Center, 8<sup>th</sup> Floor  
San Francisco, California 94111-3834  
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